

## Antworten auf die Fragen des Questionnaire des "Green Book"

### Q1

**How should the Common Strategic Framework make EU research and innovation funding more attractive and easy to access for participants? What is needed in addition to a single entry point with common IT tools, a one stop shop for support, a streamlined set of funding instruments covering the full innovation chain and further steps towards administrative simplification?**

The Common Strategic Framework (CSFRI) should provide a **common platform and structure for all EU programmes and initiatives funding research, development and innovation (RDI)**, with a **clear and transparent relation to EU policy objectives**.

The **CSFRI should encompass the entire innovation chain** with programmes, instruments and activities which are **appropriate to each phase** and which take into account the **necessary time frames** and the **specific roles and activities of stakeholders** at each step of the innovation process.

**A radical simplification of administrative rules, regulations and procedures of all EU RDI funding programmes resulting in more user-friendliness and greater consistency and reliability is essential** to attract the very best talent in Europe. Administrative rules, regulations and procedures should be applied in the same consistent way in all Directorates and Directorates general.

**A single, harmonised, dedicated web site** providing **clear, concise, timely and complete information** on all EU RDI programmes and activities under the CSFRI would simplify access for users. **All IT tools and interfaces should be thoroughly tested** before launching.

The processes and actors involved in the **preparation of future activities and programmes should be more transparent** (e.g. appointment of working groups, how results of consultations are used).

Application procedures should make **greater use of two-stage procedures, with hearings where appropriate**.

### Q2

**How should EU funding best cover the full innovation cycle from research to market uptake?**

**Research is a basic driver of R&D knowledge production and an indispensable prerequisite of innovation.** Initial phases of the innovation chain typically call for small projects involving high-risk research. Later stages of technological development require larger projects with numerous partners and competencies. This also holds for demonstration activities involving proof of concept and economic viability. Closer to market or use, small groups of partners working with a core industrial partner are more appropriate in order to respect proprietary knowledge.

The great challenge is to design EU programmes covering the entire innovation chain. For one thing, it is essential to take into account the **necessary time spans for innovation cycles in different sectors**, which can be up to one or more decades. Of great importance is the **coherence and connectivity of the different measures supporting each phase** of the whole process, from idea to market or application. However, unpredictability of results is an imminent element of curiosity-driven research. This fact should be considered.

RDI programmes should focus primarily on 2 aims: (1) **achieving the most effective performance** in RDI projects at each step of the process and (2) **facilitating connectivity between the individual steps** in order to minimise time and knowledge losses in the transition from one phase to the next. Generally, in order to maximise the impact of research, **greater focus on the results achieved** is needed.

### Q3

**What are the characteristics of EU funding that maximise the benefit of acting at the EU level? Should there be a strong emphasis on leveraging other sources of funding?**

**EU research funding is the only real common pot in Europe.** Its opportunities for **transnational cooperation** bring together partners and expertise needed to **formulate strategies and find solutions for the** grand societal and technological challenges facing Europe today on a scale not possible at the **national level**. Actions facilitating transnational cooperation for large-scale efforts should be the focus of EU funding, e.g. **cooperative research, large-scale research infrastructures, mobility, actions linking different phases of the innovation chain or the development of norms and standards.**

**Excellence as the main funding criterion** can increase the quality of European RDI and thus Europe's competitiveness.

The **right equilibrium between cooperation and competition** is important. Eliminating all duplication of efforts could slow down research (and innovation) in key areas. Some **judicious duplication of efforts is required to spur competition** and identify commercially viable approaches.

**Leveraging should be considered case by case** and a general requirement of strong leveraging avoided. It is justified with the Grand Challenges, when combined efforts and the production of market-relevant results might be accelerated when supported by different financial sources. Co-financing should not be left up to the proposers themselves. The EC should identify available co-financing sources. Support from the RSFF and EIB should be focused on fast action with close connection to RDI activities.

### Q4

**How should EU research and innovation funding best be used to pool Member States resources? How should Joint Programming Initiatives between groups of Member States be supported?**

The significant positive influence exerted by the FP in coordinating and pooling resources – particularly through **cooperative projects and ERA-NETs** – should be taken as a starting point. As far as they go, the ERA-NETs are positive examples of an effective approach towards pooling the resources of the MS, and in ERA-NET+ leveraging through EU resources reinforces these positive

effects. It is important to **respect the basic differences in philosophy and mechanisms between the curiosity-driven research activities, technology-oriented research and innovation-oriented activities**. Each requires specific and appropriate approaches.

**Joint Programming** is the logical continuation in the evolution of the coordination of national activities, from early coordinating actions such as COST and EUREKA to the ERA-NETs and Art. 185 activities. EU support should cover the **coordination effort** needed for the joint activities of the MS. Dedicated support for research would facilitate the active involvement of smaller countries with fewer own resources, enabling them to join the common effort and thus to develop their own centres of excellence. Ultimately, **true common pots and a more effective alignment of different national funding mechanisms** will be essential to make the quantum leap in impact.

Strategic partnerships bringing together European research organisations and institutes can accelerate efforts to find solutions for the grand societal challenges and should therefore be supported.

#### **Q5**

**What should be the balance between smaller, targeted projects and larger, strategic ones?**

The **balance of smaller, targeted projects to larger, strategic ones** should not be determined a priori; rather it **should depend on the nature of the scientific and technological questions addressed**. Not only **size (budget, number of partners)**, but also **project duration** matter.

Projects directed towards generating new knowledge or technologies have different aims and risks than product- or service-oriented innovation projects. **Instruments for both types of actions are needed**. Pioneer research projects are usually smaller in volume and of variable length, depending on the subject. Innovation projects are typically of shorter duration, the funding volume and rate should depend on the nature of the innovation. Strategic, mission-oriented projects covering a larger part of the innovation cycle are usually long term, highly complex and require more resources. Alternatively, their aims might be also be achieved by a **series of smaller, linked projects**.

The current division according to smaller or larger projects results from political influences rather than the inherent nature of the projects. If the total EU budget for RDI is not radically increased, a **concentration of resources on more costly demonstration or close-to-market projects would necessarily lead to a dramatic decrease in resources available for projects aimed at producing new knowledge and technologies**. Such a radical skewing of EU RDI would have a **highly detrimental** effect on the overall EU RDI system.

#### **Q6**

**How could the Commission ensure the balance between a unique set of rules allowing for radical simplification and the necessity to keep a certain degree of flexibility and diversity to achieve objectives of different instruments, and respond to the needs of different beneficiaries, in particular SMEs?**

Profound simplification can be achieved by a **general acceptance and use of national accounting principles** and by applying EU regulations, rules and procedures according to the **principles of consistency, transparency, and stability**.

Where national accounting systems or rules do not exist for a certain funding scheme, a **model EU Grant Agreement providing a complete, consistent, and transparent basis for cost calculation** should be used, as was the case up to FP5. **New funding instruments should be based on the Rules of Participation.**

**Rules and procedures should be flexible enough to take into consideration that research is by definition an exploration of the unknown, with often unpredictable results.** Particularly for publicly owned participants, a **flexible, trust-based approach** is necessary. For innovation-oriented projects close to product development (i.e. with low technological risk) involving SMEs, flat rates or fixed contributions could be used. **All funding rates should be based on real costs.** The Helmholtz Association is uneasy about **results-based funding**: This should be carefully analysed and defined to avoid forcing RDI actions into a narrow, rigid corset that lowers the scale of ambition.

The **Rules of Participation**, which will apply for the entire period at least until 2020, should be applied so that annual adjustments of the Work Programmes do not lead to insurmountable legal obstacles. The **FP7 rules for IPR** are equitable, fair and practical and should be continued.

#### **Q7**

**What should be the measures of success for EU research and innovation funding? Which performance indicators could be used?**

Performance indicators for RDI funding programmes should be differentiated according to the **nature of the RDI activities, relevant time frame and stage of the innovation cycle involved.** Obviously, different sets of specific indicators and time frames should be used depending on whether the success of RDI funding programmes/ RDI projects is being evaluated.

For research activities, **indicators with shorter “reaction times”** are needed which can be used to indicate the need to change course or seek improvements within the range of a few years. The Helmholtz Association evaluates its strategic research programmes using a set of criteria based on peer-reviewed evaluations assessing scientific excellence, attractiveness for global players, international collaborations, strategic relevance and acquisition of third-party funds, including funding from industry. “Classic” criteria like publications or patents, high-level training, prizes, etc. are also used.

In addition, the different research fields at Helmholtz are encouraged to identify relevant criteria, which are particularly useful for a critical comparison of scientific activities in a given research area.

It is important to ensure that the indicators **reflect the underlying objectives** and **are appropriate to the specific phase of research or of the innovation process** and that in addition to ex-post evaluations they also allow to evaluate future strategic proposals based on the scientific potential of the participating partners.

#### **Q8**

**How should EU research and innovation funding relate to regional and national funding? How should this funding complement funds from the future Cohesion policy, designed to help the less developed regions of the EU, and the rural development**

## programmes?

The guiding principles should be **subsidiarity, promoting excellence in RDI and achieving a balance between cooperation and competition.**

EU RDI funding should focus on actions that require diverse competencies on a scale that the regions or Member States cannot effectively handle. Thus, **large-scale tasks going beyond the capacity of any one country** and the **development of EU-wide processes and standards** should be a particular focus of RDI funding at the EU level.

**Cooperation and coordination** among the different funding authorities are a pre-condition for effective, complementary processes and actions. Whatever the level involved, it should be taken into account that research and innovation have their specific objectives and characteristics, which are all essential to the overall process and should work hand in hand.

It is often stated that duplication of efforts should be categorically eliminated to integrate EU RDI. This view mistakes the nature of research, where often different approaches must be investigated in parallel to identify or validate the most viable one. Therefore, **some overlapping of activities – within or between the regional, national or EU levels – is justifiable in specific cases.** This also promotes competition and ultimately fosters excellence.

Owing to limited resources, **EU RDI funding should concentrate on building bridges to national and regional funding.** To build a bridge, a good foundation is needed, and this is provided by national and regional efforts.

### Q9

**How should a stronger focus on societal challenges affect the balance between curiosity-driven research and agenda-driven activities?**

**A stronger focus on societal challenges will by no means obviate the need for curiosity-driven research.** To the contrary, many aspects of the societal challenges often require fundamental research to generate the knowledge and understanding needed to elaborate concrete solutions that will ultimately benefit society. **Therefore, curiosity-driven research and agenda-driven activities should not be thought of as in opposition to each other, rather they cross-fertilise each other.** For example, therapies for many diseases affecting EU citizens will not be achieved until basic biological processes are elucidated. Likewise, strategies for mitigation of and adaptation to climate change will only be possible when the causes and impacts of climate change are understood.

The **balance between them should depend on the nature of the scientific and technological challenges addressed and the required time frame.** Incremental RDI can be achieved with short-term activities. Most break-through research, technologies or innovations need more than 10 years to achieve take-up industry (example robots: They are in full operation for simpler activities; self-learning robots require good inputs from curiosity-driven research).

### Q10

**Should there be more room for bottom-up activities?**

Bottom-up approaches should not be limited to the ERC or the Marie Curie actions. **A balance between bottom-up and top-down is also needed e.g. for activities related to societal challenges or new and emerging technologies in various thematic areas** (e.g. NEST in FP6 or Future Emerging Technologies (FET) in the ICT programme). The processes leading to the formulation of RDI programmes should be **optimised, more transparent, with more participation from the stakeholders**: Thus, we need “not only more, but better”.

Overarching themes and objectives relating to societal or technological challenges can be set in a top-down approach through policy decisions. **The strategies and road maps for achieving them should be formulated in a bottom-up approach involving all relevant stakeholders, who implement them according to their respective roles, capabilities and responsibilities.**

**Research organisations and institutes** that carry out strategic research as their core mission can make a valuable contribution to this process by identifying knowledge gaps, formulating research and technological strategies to overcome them and pointing the way towards future activities. Through collaborations with diverse international partners along the entire RDI value chain, they form **strategic partnerships that act as important intermediaries linking major stakeholders and expediting the RDI process.** Examples of such strategic partnerships are ACARE ([www.acare4europe.org](http://www.acare4europe.org)) and EERA ([www.eera-set.eu](http://www.eera-set.eu)).

#### **Q 11**

**How should EU research and innovation funding best support policy making and forward-looking activities?**

See Q 10.

Science should provide a **base of unbiased, valid evidence of the highest quality to support policy-making**; scientists must remain as impartial as possible in their judgments, not taking sides, in order to retain their credibility and their acceptance by society as a whole. **Evidence-based analyses can also provide a basis for foresight activities** to identify future societal and technological challenges.

**Increased use of strategic agendas and roadmaps** clearly linking political objectives to RDI goals would have a strong impact here.

With regard to innovation processes, **impact analyses of the results of RTD projects** should be carried out more thoroughly, with appropriate time frames, to assess their potential for future innovation activities, including e.g. support through the EIB or through pre-commercial procurement. However, when pursuing this approach, bureaucratic efforts should be kept at a minimum level.

#### **Q12**

**How should the role of the Commission's Joint Research Centre be improved in supporting policy making and addressing societal challenges?**

A stronger role of the JRC with increased visibility could be achieved in several ways: The JRC should provide **evidence-based support to policy-makers**, particularly in regard to societal or technological challenges. It can also provide **input for forward-looking activities** in this manner, as well as through the **analysis of general political and economical framework conditions**. Finally, the **development of norms and standards** would greatly contribute to innovation processes. This type of activity should also encompass prenormative research and include access to data sources.

### Q 13

**How could EU research and innovation activities attract greater interest and involvement of citizens and civil society?**

**Education and training** to stimulate curiosity about our world should **begin at a very early age and continue throughout the school years**. The Helmholtz Association founded and supports the foundation "Little Scientists' House" (<http://www.haus-der-kleinen-forscher.de/en/welcome.html>), which provides support and educational materials for activities in science and technology for kindergartens and primary schools throughout Germany. The Helmholtz research centres have developed school laboratories where older school pupils can perform hands-on experiments ([http://www.helmholtz.de/en/research/promoting\\_research/promoting\\_young\\_academics/school\\_abs\\_network/](http://www.helmholtz.de/en/research/promoting_research/promoting_young_academics/school_abs_network/)).

By **increasing science and technology literacy already in school**, it will be possible to gain **more understanding and acceptance for new research themes and technologies** in society as a whole and conduct more fruitful public debates by illuminating the relations between society, the environment and research and technology. Indeed, **outreach and civil engagement are important dimensions of the European Research Area**. Increased outreach initiatives might also be a way of strengthening the identity of the EU as a whole throughout Europe and should be part of the concept of a "wider Europe" by investigating social and cultural identities. Here, the EIT might play a stronger role in important areas with an impact on civil society. The EU should also **fund research on the ethical, environmental and social implications of technology**.

### Q14

**How should EU funding best take account of the broad nature of innovation, including non technological innovation, eco-innovation and social innovation?**

Innovations originate through **basic research**, which should be given adequate scope and resources. The scope of EU funding should include not only a market orientation, but also the development of **goods and services of value to society** as a whole. An example is the early-warning tsunami system on which a number of Helmholtz research centres collaborated to support the earthquake warning systems in Indonesia after the devastating tsunami in 2004 ([http://www.helmholtz.de/en/hermann/archive/2011/april\\_2011/artikel/19/tsunami\\_fruehwarnsystem\\_an\\_indonesien\\_uebergeben/](http://www.helmholtz.de/en/hermann/archive/2011/april_2011/artikel/19/tsunami_fruehwarnsystem_an_indonesien_uebergeben/)) or the network of regional climate centers established at various Helmholtz research centres to provide first-hand regional climate data based on research to the general public ([http://www.klimabuero.de/index\\_en.html](http://www.klimabuero.de/index_en.html)). Thus, funding of RDI should always **make room for this societal dimension** beyond a purely market orientation and include appropriate funding measures.

The **acceptance or non-acceptance of technological innovation** per se should also be taken into consideration. **Additional measures need to be taken, e.g. tackling ethical issues or evaluating the**

**impact of technologies on society or the environment.** Here, both the social sciences and the humanities can play an important role. Initiatives like the **European Innovation Partnerships** or the **EIT** could develop concepts for including non-technological innovation in their activities. Part of this effort is closely related to innovations in the area of services.

#### Q15

**How should industrial participation in EU research and innovation programmes be strengthened? How should Joint Technology Initiatives (such as those launched in the current Framework Programme) or different forms of 'public-private partnerships' be supported? What should be the role of European Technology Platforms?**

Participation of industry can be increased through **radical simplification of the rules and procedures** for EU RDI actions. **Instruments should be flexible, allow different time frames and project sizes** and give **more latitude for consortia to organise themselves flexibly** to solve the scientific and technological questions in the most efficient manner.

**JTIs** should allow a **flexible, lean legal structure** (not a Community body!) and a **balanced public-private-partnership** in which **all partners can participate on an equal footing**. Funding from EU and national sources should be pooled to allow for **transnational collaborative projects** without the restrictions on participation imposed e.g. in ARTEMIS when national funding runs out. The **Rules for Participation should be the default arrangement** for JTIs, especially for funding rates (which should be based on **real costs** so as to avoid the deficit funding of IMI) and IPR arrangements. A practical, equitable basis for public-private partnerships has been developed by the **Responsible Partnering Initiative** (<http://www.responsible-partnering.org/>).

**European Technology Platforms (ETPs)** like ACARE (Advisory Council for Aeronautical Research in Europe) provide a strategic, holistic, multidisciplinary approach to key areas for European industry, based on a shared strategic vision of all stakeholders and a harmonised European, national and private implementation of strategies according to the capabilities and responsibilities of the various actors.

#### Q16

**How and what types of Small and Medium-sized Enterprises (SME) should be supported at EU level; how should this complement national and regional level schemes? What kind of measures should be taken to decisively facilitate the participation of SMEs in EU research and innovation programmes?**

As **Open Innovation** becomes more important to the European innovation eco-system, it is important to **reinforce the connectivity between academia and industry (including SMEs)**. SMEs capable of taking up research results and moving them into the next phase of product/service development or those offering important services to support academic research or industry should therefore receive support.

Since academic and industry (including SMEs) partners can (should) complement each other in the innovation process, EU RDI programmes should be flexible enough to **foster collaboration amongst academic and industry partners (including SMEs)**, rather than segregate SMEs into separate



programmes. **Stipulating minimum levels of SME participation (e.g. 15%) across the board does not make sense; the “right” level of SME participation depends on the specific scientific or technological challenge, and this can differ greatly in different fields.**

SMEs are often embedded in a specific regional or national context; therefore, **national and regional programmes** as well as the **Structural Funds** should be strategically used to support the specific role of SMEs in the innovation process. Better access to **venture capital** or other **sources of investment funding** would also help.

As with all other stakeholders, SMEs would greatly benefit from the **simplification of the rules, instruments and procedures** for EU programmes, as well as a significant **acceleration of administrative processes**.

#### **Q17**

**How should open, light and fast implementation schemes (e.g. building on the current FET actions and CIP eco-innovation market replication projects) be designed to allow flexible exploration and commercialization of novel ideas, in particular by SMEs?**

The **bottom-up approach adopted by the FET actions in the ICT programme should be extended** where possible to other thematic areas (cf. Question 10).

By definition, actions in future and emerging technologies can be so far upstream that **mandatory commercialisation plans are not appropriate**. Projects exploring future and emerging technologies should be **flexible** enough to develop potential market applications as they arise (also during the project). A **more efficient approach might be to provide funding for subsequent projects** to further explore the results obtained by certain promising FET projects (after they have been completed and an impact assessment carried out) to allow them to move forward to the next phase in the innovation process. This **flexible approach of smaller, connected projects geared toward specific phases of the innovation chain** would also permit **more focused collaborations among targeted partners who bring in the necessary expertise required at each phase**.

Additional funding could be provided to **facilitate proof of concept/validation** and the development of a **business plan**, even the **creation of spin-off companies** developed from successful projects, possibly through the use of revolving credits or reimbursement of funding in the event of commercial success.

#### **Q18**

**How should EU level financial instruments (equity and debt based) be used more extensively?**

As a general principle, EU-level financial instruments should promote solutions and incentives to **overcome the gaps or weaknesses in the connectivity between the different stages of the innovation chain**. For example, the current lack of venture capital stifling entrepreneurship in Europe could be addressed through the **establishment of a major European (cross-border) venture capital fund for early-stage proof of concept and business development** to facilitate the creation of spin-off companies from academic research and the reinforcement of young businesses beyond the start-up

phase. This would **accelerate the transfer of research results** into the economy and society and encourage the participation of SMEs.

The **various EU financial instruments (venture capital fund, Risk-Sharing Finance Facility, EIB) should be complementary to comparable national funding or investment schemes** and provide added value by taking on tasks that national instruments cannot cover (level of ambition and scale, cross-border funding, elimination of regulatory or fiscal bottlenecks).

#### **Q19**

**Should new approaches to supporting research and innovation be introduced, in particular through public procurement, including through rules on pre-commercial procurement, and/or inducement prizes?**

Precommercial public procurement can be a powerful tool to **incentivise innovations in technologies and services and address societal challenges** that affect the majority of EU Member States in an effective and efficient way (e.g. ageing society, environmentally sustainable solutions for transport and mobility, security of energy supply, energy efficiency, low-carbon economy). However, public procurement criteria and procedures should **encourage excellence** rather than the cheapest solutions in order to **promote the development of cutting-edge technologies**. This requires a holistic approach that involves **research** in the development of innovative technologies and services and includes the **establishment and testing of Europe-wide norms and standards to ensure the quality of products or services** as well as **successful take-up**. Precommercial procurement to promote innovations provides an **arena for collaborations between academic research and SMEs**. Awarding **prizes** is an interesting idea to provide visibility and a certain degree of incentivisation, but would probably not have the same overall impact as precommercial procurement.

#### **Q20**

**How should intellectual property rules governing EU funding strike the right balance between competitiveness aspects and the need for access to and dissemination of scientific results?**

The **DESCA consortium agreement** (<http://www.desca-fp7.eu/>) is a good basis for such a balance, taking into account that **IP provisions should be subject to freedom of contract amongst partners, flexible, but fair, consistent and reliable**. The **IP Charter** initiated during the German Presidency in 2007 should also be taken into account. Reliability and fair play amongst partners should be self-evident, as set forth in the Responsible Partnership initiative (<http://www.responsible-partnering.org/>).

The Helmholtz Association is a signatory of the *Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities* and supports **open access to publications and research data** (<http://oa.helmholtz.de/>). **Rules governing EU funding should not restrict the protection of intellectual property rights, but rather leave room for individuals** to determine how their research results can best be disseminated, **balancing commercial exploitation and societal benefits**. For example, a Helmholtz scientist and his Italian partners decided against commercial exploitation of an

insulin-producing yeast to enable countries with emerging markets to exploit this newly developed system (see e.g. <http://oa.helmholtz.de/index.php?id=284#c1581>). Such decisions reflect **flexible IP strategies** that are a prerequisite to incentivise innovations, but also allow wide dissemination of research results.

The immense problem of **conserving scientific data** should be supported at EU level by appropriate measures.

## **Q21**

### **How should the role of the European Research Council be strengthened in supporting world class excellence?**

The **ERC** has made an excellent start towards creating a new institution fostering **excellence** and **world-class frontier research** and providing opportunities to **ensure future generations of researchers** in Europe. It **should be strengthened in the future**. The administrative structures and procedures (e.g. legal structure of the ERC, selection of Scientific Council members and evaluators, peer review) should be **simple, clear and transparent and reinforce the autonomy of the ERC**. The ERC should take some effort to overcome the strong traditional categorisation of scientific fields: "Life Sciences", "Social Sciences", and "Physical Sciences". The **evaluation panels** should be updated regularly to **reflect new, multidisciplinary fields of inquiry** (e.g. biomedical engineering). More efforts should be made to attract **scientists from Third Countries** and make Europe an attractive place to work.

The extension of the funding schemes to include **small-scale collaborative projects** on the order of NEST in FP6 or the FET actions in the ICT programme could facilitate **multidisciplinary frontier research projects** that cannot be easily carried out by a single principal investigator and his/her team. These might also enable scientists in some Member States to participate in ERC projects by providing a way to overcome the lack of top equipment or infrastructures.

**Basic research should not be funded exclusively through the ERC**, but rather funded where necessary and appropriate in other programme areas.

## **Q22**

### **How should EU support assist Member States in building up excellence?**

The evolution of the framework programmes shows that **open competition** among **multinational consortia** has fostered not only **the integration of the European Research Area** through **collaborative research projects**, but has also had a "raising-the-boats" effect, **improving the overall quality of European RDI activities**. **Transnational collaborative RDI projects** and **access to research infrastructures** **should be expanded**, especially to **provide opportunities for groups in Member States that are not so well represented**.

**Twinning projects** e.g. between the EU-15 and EU-12 to provide a win-win situation for all groups involved can also lead to more integration of these countries. The Helmholtz Association supports **Helmholtz-Russia Joint Research Groups** to provide career perspectives for young scientists in the Russian Federation

[http://www.helmholtz.de/en/research/cooperations/international\\_projects/promoting\\_young\\_scientists\\_on\\_an\\_international\\_level/helmholtz\\_russia\\_joint\\_research\\_groups/](http://www.helmholtz.de/en/research/cooperations/international_projects/promoting_young_scientists_on_an_international_level/helmholtz_russia_joint_research_groups/)). These research groups help improve the research infrastructure and counteract brain drain in the Russian Federation, while providing Helmholtz scientists with excellent research partners. Such partnerships could serve as a model for other kinds of collaborative projects. The Structural Funds could also be used for this purpose.

**Expanding Master's and PhD programmes**, especially in emerging research fields or in entrepreneurship or through the EIT, can improve quality and prepare for future needs.

### Q 23

#### **How should the role of Marie Curie Actions be strengthened in promoting researcher mobility and developing attractive careers?**

Marie Curie actions should continue to be **thematically open** and **oriented towards research** rather than education to **encourage the career development of young scientists** as well as the **emergence of new research themes** and **cover the entire span of research** careers. There should be more opportunities for **personnel exchanges and sabbaticals**, also for more established **researchers (Lifelong Learning)**, especially in view of the decrease in trained personnel and researchers as a result of demographic developments in the EU. The increasing importance of Open Innovation requires **more opportunities for collaborative research projects and mutual exchanges and training between the public and the private sectors**. However, for host-driven actions involving very fundamental research, it is not always appropriate to involve industry partners or SMEs; therefore, partnerships with industry or SMEs should not be a requirement when the topic does not lend itself to such collaborations. Specifically, **more resources for the Initial Training Networks** and the **individual fellowships** should be made available to meet the high demand.

Transnational mobility often entails difficulties concerning **pension rights, work or residence permits, health insurance, etc.** The EU should continue its efforts to **improve the working conditions for researchers throughout Europe** by fostering the **exchange of best practice** and **moderating the discussion** among the Member States regarding these issues.

### Q24

#### **What actions should be taken at EU level to further strengthen the role of women in science and innovation?**

The EU has not succeeded in meeting the 40% quota set for the participation of women in EU actions, although this is in large part due to **structural problems at the national level**.

Still, the EU can promote the role of women in EU programmes in projects through concrete actions: by **improving the quality of teaching in the MINT subjects** in school and university curricula; special activities such as a **European Girls' Day** to raise girls' curiosity about science and technology and inform them about careers in research, engineering and other technological fields; **mentoring and networks** for women in science; **active recruiting to increase the proportion of women in expert groups or as evaluators** for EU programmes. Specific grants for a reintegration phase into research after a period of

parental leave could be offered, e.g. as a new Marie Curie measure. Finally, much could be accomplished if the general framework conditions for conducting RDI activities at all levels in Europe were **more family friendly** (e.g. **expanding the availability of quality child care, tax credits for child care, measures for parental leave like those of the ERC Starting Grants, re-entry measures after parental leave, measures providing for flexible working times and conditions, to give only a few examples**).

## Q25

### **How should research infrastructures (including EU-wide e-Infrastructures) be supported at EU level?**

Research infrastructures (RI), **single site and distributed**, are essential to strengthen the RDI capacities of the ERA in their role as **platforms for collaborations** to produce new scientific and technological knowledge, **train scientists to meet future needs** and **develop testing methods and instruments needed for technological innovations**. RI should therefore **receive substantially more support** in the next funding period. A support to realise the **ESFRI projects** is needed.

Innovative concepts are needed to **provide more stable, long-term financing for RI, especially for operating costs**. Since European RI provide **transnational access for scientists** throughout the EU, a **larger proportion of operating costs (>20%)** should be supported by the EU where they are **incurred through expanded transnational activities (>20%)**. Reimbursement of operating costs should be possible via infrastructure-specific flat rates. MS less able to make use of RI could be better integrated through EU cofinancing of user activities for scientists from these countries. The **Structural Funds should be also be used to finance both construction costs and user fees. User fees for activities involving RI incurred during EU actions**, e.g. in the FP, should be reimbursable through project funds.

To reinforce the global competitiveness of EU RIs, **technological upgrades or the development of new instruments for specific user groups** should also be funded. Support for actions to **better coordinate the use of RIs** is also needed.

## Q 26

### **How should international cooperation with non-EU countries be supported e.g. in terms of priority areas of strategic interest, instruments, reciprocity (including on IPR aspects) or cooperation with Member States?**

Currently, the objectives and programmes of EU international cooperation activities are too diffuse, the actions too scattershot, with too little funding to have any real impact. Information about EU programmes and instruments in international cooperation is often difficult to obtain and not very user friendly. **The EU thus needs to develop a clearer, more focused strategy for international cooperation, with different specific, clearly formulated goals and appropriate measures to achieve them that are coherent with the overarching goals and instruments of other RDI programmes.**

For example, **seeking solutions for global challenges** might require long-term, open, reciprocal collaborations with different countries on a large scale, whereas **achieving global competitiveness in certain key market areas** would require a different approach, where commercial exploitation of research and technological development is the main focus and IP considerations might limit collaborations and access to results to selected partners. **Strengthening the ERA and making the EU an attractive place to**

**carry out RDI activities** might require expanding international access to (and financing for) research infrastructures and fostering world-class talent by strengthening European universities and programmes such as the ERC or the Marie Curie actions. **Reciprocal agreements between the EU and selected countries** enabling their scientists to participate in each other's funding programmes would be desirable.

#### Q 27

**Which key issues and obstacles concerning the ERA should EU funding instruments seek to overcome, and which should be addressed by other (e.g. legislative) measures?**

**More effective coordination and pooling of resources between EU and national funding programmes** are needed to achieve the ambitions of the ERA and the CSFRI. These should include truly **transnational funding mechanisms** transcending what other programmes like COST, the ESF, Eureka, or more recently the ERA-NETs, JTI or the planned Joint Programme Initiatives have been able to achieve. More coordination and pooling of resources should result in **more, rather than fewer, synergies and resources between funding levels for crucial programmes and RDI themes**.

EU RDI programmes should concentrate on actions providing a **clear added value** above that of national or bilateral opportunities.

**EU funding instruments, rules and procedures need to be much simpler, user friendly and accessible** to the RDI community in Europe, with **more transparency and coherence between EU programmes and connections with policies** concerning e.g. the ERA, the framework programme and other initiatives such as the seven Flagship Initiatives of the Europe 2020 Strategy (e.g. Innovation Union, Digital Agenda, Resource-Efficient Europe, Industrial Policy for the Globalisation Era).

Current obstacles which hamper the ERA and require legislation include issues relating to **researcher mobility** (e.g. transferability of pension rights, health insurance, work and residence permits for scientists and family members) and the **completion of the EU single market** (tender processes, knowledge exchange, EU patent).

#### Closing questions

**Are there any other ideas of comments which you believe are important for future EU research and innovation funding and are not covered in the Green Paper?**

Research organisations and institutes play a major role in **formulating and implementing strategic research agendas** for a wide variety of relevant scientific and technological questions. They **collaborate with research partners** in many different countries, **build and operate research infrastructures** that are essential for the international research community. More synergies with a greater concentration of research capacities could be achieved if European research organisations were better integrated in the formulation of research agendas and programmes (bottom up) and had more opportunities to coordinate their activities more closely.

The EU should therefore provide more **support for coordination activities for strategic alliances** of research organisations.

Examples of strategic partnerships of research organisations that work successfully according to this complementary approach are EREA (Association of European Research Establishments in Aeronautics) and EERA (European Energy Research Alliance). This approach should be expanded to other relevant thematic areas such as health and climate change.

The EU needs to spend a **greater proportion of its budget on research, technology and innovation** to remain globally competitive. The **excellence criterion** should remain paramount to ensure European competitiveness. **Diversity and a healthy balance between competition and cooperation** are crucial to the continuing growth, integration and consolidation of the ERA.